SURVEY OF COLEOPTERA COLLECTED ON THE COMMON MILKWEED, *ASCLEPIAS SYRIACA*, AT ONE SITE IN OHIO

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Abstract

Coleoptera associated with the common milkweed, *Asclepias syriaca* L., were collected daily for 90 consecutive days. Of the 132 species listed, 18 were considered to be common (50 or more collected) while the majority of species were considered temporary visitors. The host specific milkweed beetle, *Tetraopes tetrophthalmus*, was the most common beetle collected.

Introduction

The most recent survey of insects associated with milkweeds is that of Weiss and Dickerson (1921). These authors observed 27 species of Coleoptera associated with *Asclepias syriaca* in various localities in New Jersey with no attempt at daily collecting and no information as to numbers of individuals present. This contrasts greatly with the 132 species of Coleoptera collected over a period of 90 days during the present study. Another attempt at observing insects associated with milkweed was that of Robertson (1887a, b, 1891), who was especially interested in the deposition of pollinia on insects and kept records of those species which frequented the flowers.

In this survey, we have attempted to develop a more complete list of Coleoptera collected from *A. syriaca* and to examine the daily abundance of these species during one entire growing season at a single site.

Materials and Methods

The common milkweed, *Asclepias syriaca* L. (Asclepiadaceae), is a well-known species which is widely distributed in eastern North America. The plants are herbaceous perennials which reach heights of 90-150 cm. The pinkish to purplish flowers are borne on large umbels. The perennial roots produced numerous sprouts from late May to the latter part of June. Flowering began June 15 and continued into early September.

The study site, a railroad right-of-way located in Bowling Green, Wood County, Ohio, was chosen because it was neither sprayed nor mowed during the entire season. Within this area (18.29 x 99.4 m.) 337 milkweed plants were investigated. Most plants were randomly distributed throughout the study area, but there were several clumps of 5-15 plants.

Adult beetles were hand-picked or aspirated from each of these 337 plants daily for 90 consecutive days (June 9-September 6, 1976). In addition four late-season collections were made (Sept. 12, 18, 25, and Oct. 4). Collecting was done between noon and 6:00 PM. Specimens were preserved in 85% ethanol to be sorted, counted, and determined as time permitted.

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All insects were removed from the plants each day. Therefore those collected the following day were individuals which had emerged or moved onto the milkweed plants during the preceding 24-hour period (the only exceptions to this would be the first collection, June 9, and the four late-season collections).

RESULTS AND DISCUSSION

The most abundant Coleoptera were two species of *Tetraopes,* both host-specific to milkweeds (Table 1, Figs. 1 and 2). Early emergence dates for *T. tetrophthalmus* adults have been recorded as follows: mid-June (Chemsak 1963), June 19 (Weiss and Dickerson 1921), June 6 and 17 (Williams 1941a), late June (Edgren and Calhoun 1958). Adults were last observed August 21 (Williams 1941a) and early September (Edgren and Calhoun 1958). Both *T. tetrophthalmus* and *T. femoratus* feed on milkweed roots as larvae, whereas adults eat the leaves and flowers (Chemsak 1963). We observed the adults to begin feeding at the tips of the apical leaves, and this type of damage was readily observable on many plants. The large numbers of *T. tetrophthalmus* are responsible for a reasonable amount of damage to *A. syriaca* plants, but such damage is not severe and is tolerated by the fast-growing plants. Although Chemsak (1963) reports that adult *T. tetrophthalmus* are not very active and do not appear to be strong fliers, the authors have observed adults in flight from plant to plant. Isolated plants, approximately 30 m or more from neighboring plants, were observed to have one or two adult *T. tetrophthalmus* present within an hour after removal of the beetle population. Exactly how far adults can migrate from neighboring milkweed plants is not known.

A second species, *Tetraopes femoratus,* occurred in much smaller numbers (fig. 2). The time of adult emergence closely parallels that recorded by other investigators. For example, Edgren and Calhoun (1958) found *T. femoratus* from late July to early September but in very low density. Similarly, Williams (1941b) first observed adults on July 23 and recorded a total of 38 individuals during the summer. *T. femoratus* is a predominantly western species, and this area is at or near its easternmost limit (Chemsak 1963) which may also help to explain its scarcity.

The chrysomelid, *Labidomera clivicollis,* which feeds on milkweed, was not common. These beetles and their larvae drop to the ground when disturbed and are difficult to locate in the undergrowth. Wilcox (1954) stated that this species was common on swamp milkweed (*A. incarnata* L.). We collected them on immature or abnormal *A. syriaca* plants occurring in stands of 20-30 individuals which reached heights generally less than 60 cm. These plants had small, narrow, apple-green leaves which were often wrinkled. None of these plants flowered. *Collops* were also found on these plants.

The majority of Coccinellidae were collected frequently on the dorsal and ventral surfaces of the leaves. Often, in older plants that had been extensively damaged by aphids, adults were collected in association with aphids, usually in leaves that had discolored and/or folded over on themselves (*Adalia bipunctata).* Larvae were observed but were not collected; they were allowed to develop into adults, which could be determined to species. Adults of *Brachyacantha ursina* were common in June and early

July and were often observed mating on the dorsal surface of the leaves. Coccinellid populations were relatively low after August 1.

Among other Coleoptera, most of the cantharids *Chauliognathus marginatus* and *Podabrus modestus* were collected while mating and constantly moving over the leaf surfaces. Some beetles were associated chiefly with the flowers, especially *Trogoderma glabrum, Diabrotica undecimpunctata, Conotelus obscurus, Megacerus discoidus, Fidia viticida,* and *Madarellus undulatus.* Species found in association with opened seed pods included *Glischrochilus quadrisignatus, Otiorhynchus ovatus, Calomycterus setarius, Sitona hispidula,* and *S. scissifrons.* The curculionids *Rhyssomatus lineaticollis* and *Gymnetron tetrum* were most common early in the season (June); these species fed on the plant stems. Predatory beetles such as Carabidae were seeking prey on the plants; for example, *Lebia viridis* adults will feed on the eggs, larvae, and pupae of flea beetles, *Altica* spp. (Isely 1920).

Although a majority of the species collected on *A. syriaca* were not abundant and probably represent species which are temporary visitors, those species that were numerous (more than 50 specimens collected) have either definite host-plant relationships (*T. tetrophthalmus, T. femoratus, L. clivicollis, R. lineaticollis,* and *G. tetrum),* are predators on other insects feeding on milkweed (*L. viridis, S. iowensis, S. terminatus, C. undecimpunctata, C. transversoguttata, H. convergens, B. ursina, A. bipunctata* and *C. fuscilabris)* or are attracted to the milkweed flowers (*M. undulatus, T. glabrum, D. undecimpunctata, C. obscurus, M. discoidus* and *F. viticida).*

Table 1. Coleoptera collected on *Asclepias syriaca* in Bowling Green, Ohio.

Family	Species	Total Individuals Collected	Dates Collected
CARABIDAE	*Lebia grandis* Hentz	1	10-VI
	Lebia viridis Say	11	13-VI to 30-VII
	Calleida punctata LeConte	5	20-VI to 27-VIII
STAPHYLINIDAE	*Stenus* sp.	1	13-VI
	Philonthus sp.	2	23-VII to 18-IX
	Aleochara sp.	4	11-VI to 2-VII
	Aleocharinae: species A	4	19-VI to 23-VII
	species B	1	23-VIII
	species C	1	28-VI
SCARABAEIDAE	*Trichiotinus piger* (Fabricius)	2	28-VI to 13-VII
BUPRESTIDAE	*Agrilus otiosus* (Gyllenhal)	2	26-VI to 5-VII
ELATERIDAE	*Aeolus dorsalis* (Say)	2	19-VI to 8-VII
	Melanotus communis (Gyllenhal)	2	12-VI to 20-VII
LAMPYRIDAE	*Photinus indictus* (LeConte)	6	13-VI to 4-VII
	Photinus pyralis (Linné)	54	23-VI to 2-VIII
	Photuris sp.	2	26-VI to 29-VI
	Pyropyga decipiens (Harris)	56	19-VI to 31-VII
CANTHARIDAE	*Chauliognathus pennsylvanicus* DeGeer	6	8-VIII to 26-VIII
	Chauliognathus marginatus Fabricius	29	20-VI to 11-VIII*
	Podabrus modestus (Say)	35	10-VI to 4-VII*
	Podabrus sp. A	1	11-VI
	sp. B	1	28-VI
	Silis latiloba Blatchley	1	27-VII
	Silis sp.	4	31-VII to 8-VIII
	Trypherus latipennis (Germar)	2	16-VI to 1-VII
	Cantharus sp.	3	18-VI to 12-VII

DERMESTIDAE	*Trogoderma glabrum* (Herbst)	122	23-VI to 18-VIII
	Attagenus sp.	1	18-VI
	Anthrenus sp.	4	14-VI to 2-VII
	Megatoma sp.	1	13-VII
CLERIDAE	*Cymatodera undulata* (Say)	1	29-VII
	Isohydnocera tabida (LeConte)	1	17-VI
	Isohydnocera curtipennis (Newman)	10	14-VI to 1-VII*
	Enoclerus sp.	2	19-VI to 23-VI
MELYRIDAE	*Collops* sp.	3	9-VI to 15-VII
NITIDULIDAE	*Glischrochilus quadrisignatus* (Say)	61	2-VII to 4-X
	Conotelus obscurus Erichson	23	18-VI to 12-VII
	Stelidota geminata (Say)	1	26-VIII
	Brachypterolus pulicarius (Linné)	1	22-VI
CRYPTOPHAGIDAE	*Antherophagus ochraceus* Melsheimer	5	28-VI to 31-VII
LANGURIIDAE	*Acropteroxys gracilis* (Newman)	5	11-VI to 11-VII
PHALACRIDAE	*Phalacrus* sp.	18	14-VI to 30-VIII
	Stilbus sp.	5	3-VII to 15-VII
CORYLOPHIDAE	Undetermined sp.	7	17-VI to 7-VIII
COCCINELLIDAE	*Scymnus (Pullus) iowensis* Casey	277	13-VI to 4-X*
	Scymnus (Pullus) socer LeConte	1	15-VII
	Scymnus (Diomus) terminatus (Say)	73	21-VI to 29-VIII*
	Coccinella undecimpunctata (Linné)	284	8-VII to 4-X*
	Coccinella transversoguttata Mulsant	347	17-VI to 4-X*
	Coccinella novemnotata Herbst	8	18-VI to 10-VIII
	Hyperaspis undulata (Say)	15	11-VI to 25-VIII
	Hyperaspis binotata (Say)	1	23-VI
	Hippodamia parenthesis (Say)	28	6-VII to 13-VIII*
	Hippodamia tridecimpunctata tibialis (Say)	10	26-VI to 23-VIII
	Hippodamia convergens Guérin	241	18-VI to 4-X*
	Brachyacantha ursina (Fabricius)	323	10-VI to 10-VIII*
	Cycloneda sanguinea (Linné)	37	19-VI to 31-VIII*
	Adalia bipunctata (Linné)	323	14-VI to 1-IX*
	Coleomegilla fuscilabris Mulsant	74	11-VI to 6-IV*
	Epilachna varivestis Mulsant	1	15-VII
CLIDAE	*Hadraule blaisdelli* (Casey)	2	20-VII
MORDELLIDAE	*Mordella marginata* (Melsheimer)	4	15-VI to 26-VIII
	Mordellistena semiusta LeConte	1	26-VII
	Mordellistena marginalis (Say)	1	31-VIII
	Mordellistena pustulata Melsheimer	2	13-VI to 15-VI
	Pentaria trifasciata (Melsheimer)	2	27-VI to 12-VIII
MELOIDAE	*Epicauta pestifera* Werner	1	18-VI
	Epicauta pennsylvanica (DeGeer)	5	1-VIII to 26-VIII
ANTHICIDAE	*Anthicus ephippium* LaFérte	1	12-VII
	Ischyropalpus nitidulus LeConte	1	8-VII
CERAMBYCIDAE	*Tetraopes tetrophthalmus* (Forster)	2,682	10-VI to 20-VIII*
	Tetraopes femoratus LeConte	64	17-VI to 12-IX*
	Megacyllene robiniae (Forster)	2	18-IX
	Dectes spinosus (Say)	3	22-VII to 26-VII
	Typocerus velutinus (Olivier)	1	28-VI
	Hippopsis lemniscata (Fabricius)	1	5-VII
BRUCHIDAE	*Megacerus discoidus* (Say)	6	28-VI to 1-VIII
	Althaeus n. sp.	1	3-VIII

CHRYSOMELIDAE	*Crioceris asparagi* (Linné)	20	27-VI to 22-VIII*
	Lema trilineata Olivier	3	24-VII to 14-VIII
	Fidia viticida Walsh	3	24-VI to 19-VII
	Paria thoracica (Melsheimer)	2	22-VI to 6-VII
	Chrysochus auratus (Fabricius)	12	2-VII to 14-VIII
	Zygogramma suturalis (Fabricius)	1	26-VII
	Labidomera clivicollis (Kirby)	24	11-VI to 18-IX
	Diabrotica undecimpunctata howardi Barber	20	19-VI to 6-IX
	Diabrotica longicornis (Say)	1	17-VII
	Trirhabda virgata LeConte	3	4-VII to 25-VII
	Crepidodera nana (Say)	3	19-VI to 23-VIII
	Crepidodera sp.	1	19-VI
	Psylliodes convexior LeConte	2	15-VI to 19-VI
	Psylliodes punctulata Melsheimer	2	19-VI to 7-VII
	Phyllotreta zimmermanni (Crotch)	14	11-VI to 25-VII*
	Phyllotreta cruciferae (Goeze)	2	13-VI to 17-VI
	Blepharida rhois (Forster)	1	18-IX
	Longitarsus insolens Horn	4	14-VII to 10-VIII
	Disonycha xanthomelas (Dalman)	18	13-VII to 17-VIII
	Chaetocnema confinis Crotch	3	15-VI to 16-VI
	Systena frontalis (Fabricius)	1	5-VIII
	Altica chalybea Illiger	1	25-VI
	Altica litigata Fall	1	23-VI
	Epitrix cucumeris (Harris)	1	15-VI
	Epitrix fascula Crotch	2	11-VI to 18-VI
	Anoplitis inaequalis (Weber)	3	5-VII to 3-VIII
	Chalepus dorsalis Thunberg	1	13-VI
	Deloyala guttata Olivier	93	9-VI to 4-X*
	Metriona bicolor (Fabricius)	57	10-VI to 25-IX*
	Phagiometriona clavata (Fabricius)	5	26-VI to 13-VIII
CURCULIONIDAE	*Otiorhynchus ovatus* (Linné)	18	7-VII to 30-VIII
	Calomycterus setarius Roelofs	2	29-VI to 13-VII
	Sitona flavescens (Marsham)	1	27-VI
	Sitona scissifrons (Say)	3	13-VI to 29-VII
	Sitona hispidula (Fabricius)	7	9-VI to 29-VIII
	Hypera postica (Gyllenhal)	1	14-VIII
	Hypera punctata (Fabricius)	1	20-VIII
	Smicronyx flavicans (LeConte)	1	23-VIII
	Smicronyx corniculatus (Fabricius)	1	8-VIII
	Tychius picirostris (Fabricius)	1	18-VII
	Curculio caryae (Horn)	1	6-VIII
	Gymnetron antirrhini Paykull	3	13-VII to 4-VIII
	Gymnetron tetrum (Fabricius)	135	9-VI to 13-VIII*
	Baris striata Say	1	5-VII
	Madarellus undulatus (Say)	89	14-VI to 30-VII*
	Centrinaspis sp.	4	3-VII to 4-VIII
	Cylindrocopturus nr. *quercus* (Say)	1	27-VI
	Conotrachelus anaglypticus Say	1	30-VII
	Conotrachelus nenuphar (Herbst)	1	2-VIII
	Rhyssomatus lineaticollis (Say)	46	9-VI to 25-VIII*
	Tyloderma foveolata Say	3	7-VII
	Sphenophorus parvulus Gyllenhal	1	27-VI
	Sphenophorus zeae (Walsh)	1	13-VI
SCOLYTIDAE	*Chramesus hicoriae* LeConte	1	29-VI

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*Collecting data represented graphically in Fig. 1 and 2.

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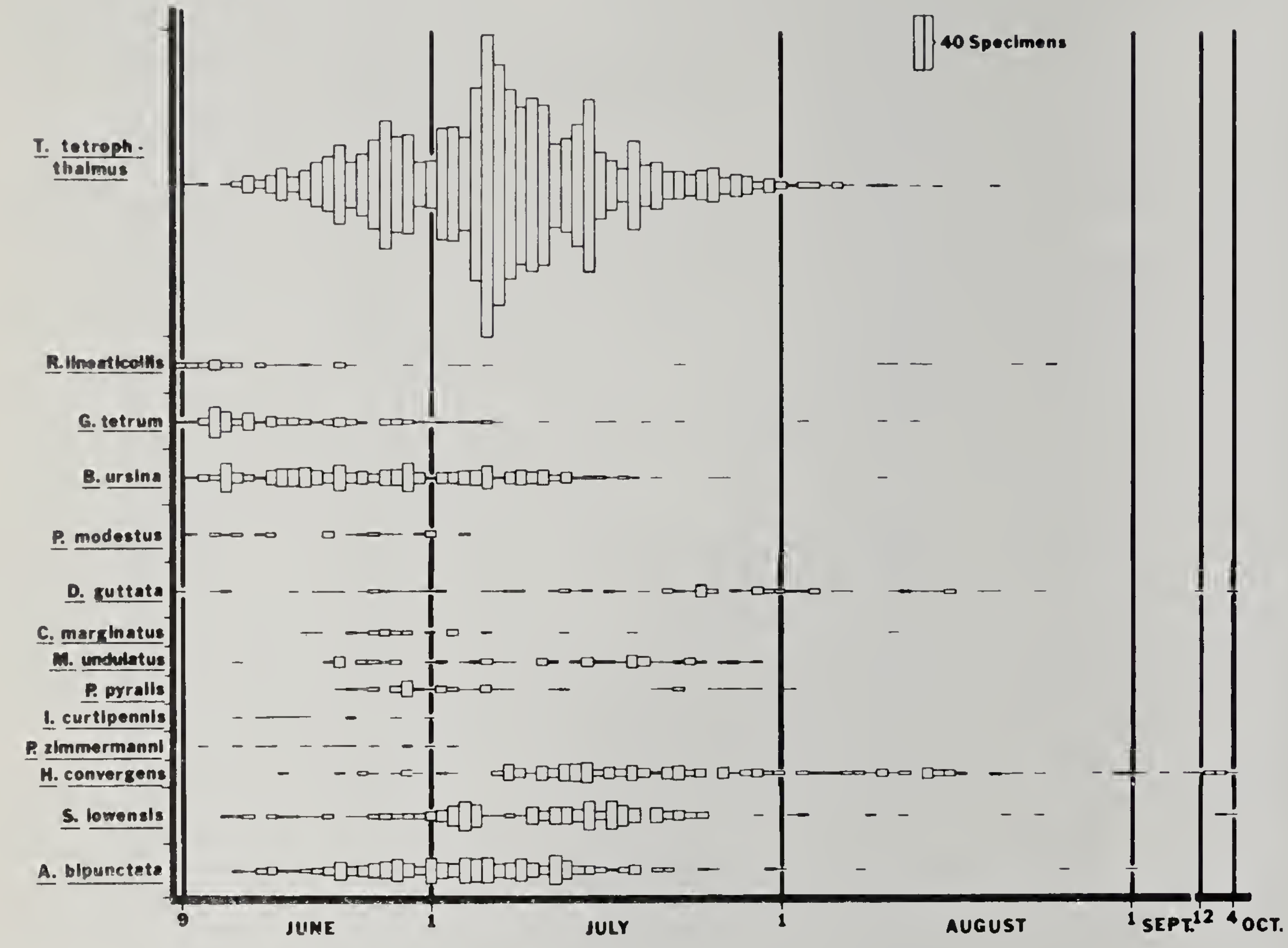

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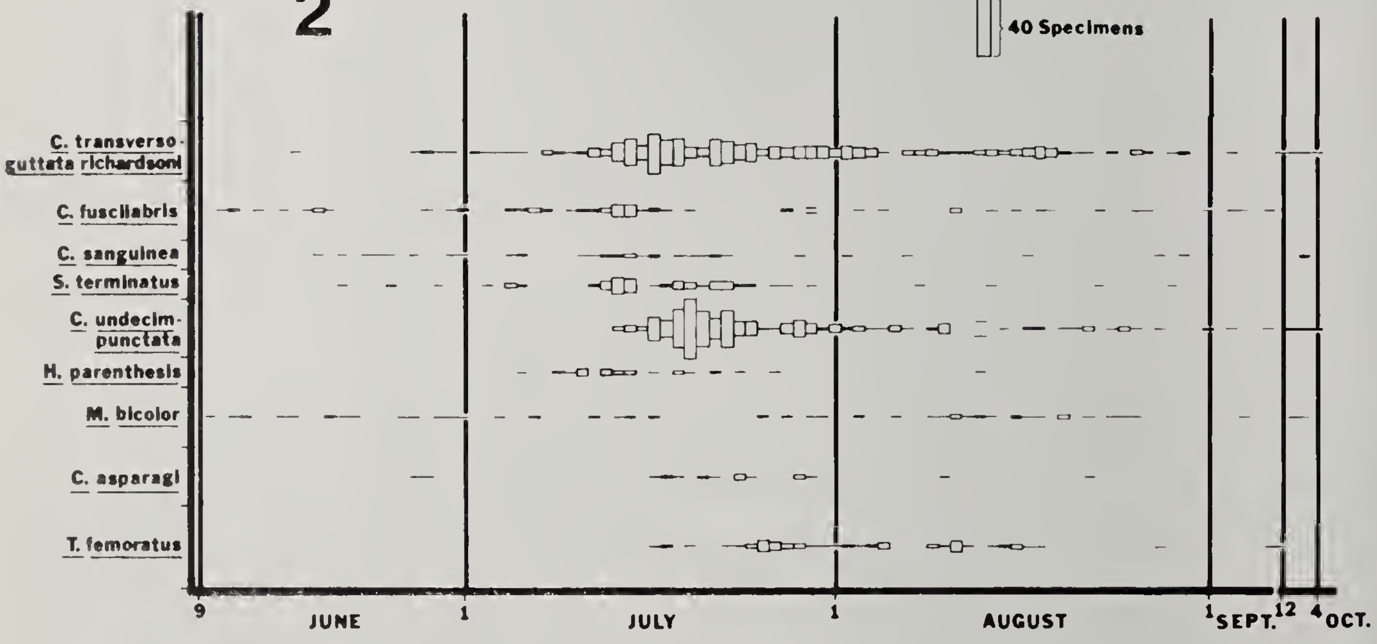

Fig. 1 & 2. Graphs illustrating the numbers of individuals collected during the collecting period.

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LIVE INSECTS PROVE BIG U.S. HIT[1]

Today, live insects are the main attractions in scientific activities from junior high exhibits to complex laboratory experiments. The demand for these creatures in their natural state has prompted "bug" enthusiasts to extend their searches across state lines, and even into foreign countries. What these collectors carry, mail, or have shipped home also happens to be of concern to the U. S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS). This agency has the job of keeping hundreds of harmful insects out of this country.

To do this, APHIS not only requires special import permits for incoming bugs, but carefully screens them upon arrival at any of about 80 U.S. ports of entry. Intrastate movement of live insects is also restricted by the agency.

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[1] Adopted from USDA News Release 2453-76.